REMARKS

Reconsideration of the present application is respectfully requested.

I. Status of the Claims

Claims 1 and 2 are pending.

Claim 1 is amended. Applicant has amended claim 1 to more clearly recite the claimed subject matter. In particular, claim 1 has been amended to recite the setting angles of both the first and second throw-away tips relative to the cutter rotation direction. Support for this claim amendment can be found in ¶¶ [0066] and [0077]-[0084] of the published application. The proposed claim amendments do not contain, nor constitute new matter.

II. Rejection under 35 U.S.C. §103(a)

The Examiner has rejected claims 1-2 under 35 U.S.C. § 103(a) as being unpatentable over U.S. 5,919,008 to Shimomura (Shimomura) in view of JP 2001-212712 to Nakasaki.

Claim 1 points out a pin mirror cutter having a first and second tip, wherein those tips are arranged so that each long face is aligned in the cutter rotation direction. Claim 1 also points out that the rake angle of the first throw-away tip is positive relative to the cutter rotation direction. Additionally, the second tip has a rake angle that is negative with respect to this rotation direction. This arrangement of angles of the cutting tips relative to the rotation direction of the cutter provides a pin mirror cutter that possess superior characteristics relative to the prior art. Specifically, by using two different tips arranged at different positive and negative angles, the cutting resistance of the object to be machined can reduced. This also allows for increased stability of the crank shaft which in turn allows for a greater degree of machining precision relative to the prior art.

Shimomura teaches a pin cutter mirror having a first and second tip and mounting hardware. It is the Examiner's position that Shimomura teaches that both the long faces of the first and second throw away inserts provide a rake face in a cutter direction. The Examiner, however, concedes that Shimomura fails to teach the tip/insert having a substantially trapezoidal shaped body. Applicant respectfully notes that Shimomura teaches in Fig 3 and 4 the use of square cutting inserts. Therefore, it is not obvious that the faces identified by the Examiner (F1) are indeed long faces as described by the amended claim 1. Specifically, since all the sides of the first and second throw-away tips of Shimomura have the same dimensions, it is impossible to determine which, if any side is the "long side." In fact, Shimomura does not disclose a mount seating where both rake faces are defined by the long side. Additionally, Shimomura fails to teach that the angle of the rake faces for both the first and second tip are angled positively and negatively, respectively to the cutter rotation direction T.

The Examiner seeks to cure this deficiency by citing Nakasaki as providing trapezoidal shaped cutting tips. Even though Nakasaki discloses cutting tips having a trapezoidal shape, these are used at the end of an end mill, and not a milling cutter. There is not suggestion or motivation in the cited prior art that particular end mill cutting tips would be useful in a milling cutter. Further, the prior art does not disclose first and second cutting inserts that are angled positively and negatively (respectively) to the cutter rotation direction. Furthermore, the angle orientation of the trapezoidal cutting insert is dependent on the location of the long faces. See Fig 2, Published Application. Since neither Nakasaki nor Shimomura teach the use of the long face, combining those elements to recite what is taught in Claim 1 is not obvious. More importantly, merely combining the elements cited in the prior art fails to achieve the proper orientation. There is no teaching in the Nakasaki that provides the orientation at which the trapezoidal cutting inserts should be secured. Therefore it would take undue experimentation to arrive that the long face orientation angles described in amended claim 1. Since Figs 3-4, and the specification of Shimomura, fail to disclose the orientation of the angles of the rake face, it is clear that no combination of prior art

would provide the recited angle. As such, Applicants respectfully submit that the Shimomura and Nakasaki references, alone or in combination, fail to point out or suggest the complete invention as defined by the amend claims.

The Examiner has cited no combination of the cited prior art that provides for the complete invention as disclosed in claim 1. As such, the rejection of claim 1 under 35 U.S.C. §103(a) has been overcome and should be removed. Claim 2 depends from claim 1. Since claim 2 depends from a non-obvious claim, the subject matter of claim 2 is itself, non-obvious. As such the rejection of claim 2 under 35 U.S.C. §103(a) should likewise be removed.

CONCLUSION

In view of the above discussion, applicant believes the pending application is in condition for allowance. It is believed that all of the stated grounds of rejections have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

In the event that an extension of time is required, or may be required in additional to that requested in a petition of extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely. The Commissioner is hereby authorized to charge any unpaid fees deemed required in connection with this submission or to credit to Deposit Account No. 50-4570.

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Respectfully submitted,

By
Jordan G. Garner
Registration No.: 60,148
LEASON ELLIS LLP.
81 Main Street, Suite 503
White Plains, New York 10601
(914) 288-0022(Tel)
(212) 288 0023(Fax)
Attorneys/Agents For Applicant